

CLAIMS

1. A method for manufacturing a glass substrate (21) for an information recording medium, the manufacturing method
5 being characterized by:

forming (S14) a surface layer (27) on a surface (22) of a disk-shaped glass plate (21a) having a predetermined composition and a predetermined chemical resistance, with the surface layer having a composition differing from the
10 predetermined composition and a chemical resistance that is lower than the predetermined chemical resistance;

scrubbing (S15) the surface with an abrasive (33) and a scrub member to form a texture (23) including a plurality of projections (24) extending in a circumferential direction of
15 the surface; and

selectively removing (S16) an upper portion of the surface layer that is part of the plurality of projections with an etching liquid.

20 2. The manufacturing method according to claim 1, characterized in that the etching liquid is alkaline.

3. The manufacturing method according to claim 1 or 2, wherein the glass plate is a multi-component glass
25 material containing at least silicon oxide, and said forming a surface layer includes decreasing the ingredient ratio of at least one component excluding silicon oxide so that the ingredient ratio of silicon oxide in the surface layer is greater than that in a portion (26) excluding the surface
30 layer.

4. The manufacturing method according to claim 3, wherein the multi-component glass material contains at least one of aluminum oxide and alkaline earth metal oxide, and the

at least one component is the at least one of aluminum oxide and alkaline earth metal oxide.

5. The manufacturing method according to any one of claims 1 to 4, wherein the surface layer has a thickness of 1 to 7 nm.

6. The manufacturing method according to any one of claims 1 to 5, wherein said forming a surface layer includes immersing the glass plate in a strong acid solution having a pH of 3.0 or less and then immersing the glass plate in a strong alkaline solution having a pH of 10.5 or greater.

7. The manufacturing method according to any one of claims 1 to 6, wherein said forming a texture includes scrubbing the surface so that the projections reach a lower layer of the surface layer.

8. The manufacturing method according to claim 4, wherein said forming a surface layer includes an acid process, for immersing the glass plate in a strong acid solution and dissolving the at least one of aluminum oxide and alkaline earth metal oxide in the strong acid solution to form the surface layer, and an alkaline process, for subsequently immersing the glass plate in a strong alkaline solution, the alkaline process uniformly etching the surface layer to adjust the thickness and adjust the composition of the surface layer.

9. The manufacturing method according to any one of claims 3 to 6, characterized in that the ingredient ratio of silicon oxide in the surface layer is greater than 1.0 time but less than or equal to 1.4 times the ingredient ratio of silicon oxide in the portion excluding the surface layer.

10. A method for manufacturing a glass substrate (21) for an information recording medium, the manufacturing method being characterized by:

5 preparing (S11, S12) a disk-shaped glass plate (21a) having a predetermined composition and a predetermined chemical resistance;

polishing (S13) the glass plate to form a smooth surface (22);

10 chemically processing (S14) the smooth surface to form a surface layer (27) having a composition differing from the predetermined composition, a chemical resistance that is lower than the predetermined chemical resistance, and a first thickness;

15 forming (S15) a texture (23) including a plurality of projections (24) on the surface, the projections extending over the surface layer and a lower layer (26) adjacent to the surface layer; and

selectively removing (S16) only part of the plurality
20 of projections included in the surface layer so that the plurality of projections have flat upper surfaces that are flush with each other.

11. The manufacturing method according to claim 10,
25 wherein said forming a surface layer includes scrubbing the surface with a scrub member in a circumferential direction of the glass plate.

12. The manufacturing method according to claim 10,
30 wherein said removing includes uniformly etching the surface layer so that the surface layer remaining on the lower layer has a second thickness that is less than the first thickness.

13. A glass substrate for an information recording

medium, the substrate being characterized by:

5 a surface having a predetermined arithmetic mean roughness (Ra) and a maximum peak height (Rp), wherein the arithmetic mean roughness is measured with an atomic force microscope, and the ratio of the maximum peak maximum peak height relative to the arithmetic mean roughness is 10 or less.

10 14. The glass substrate according to claim 13, characterized in that the arithmetic means roughness is 1.5 nm or less, and the maximum peak height is 10 nm or less.

15 15. The glass substrate according to claim 13, characterized in that the glass substrate is disk-shaped, the surface has a texture including a plurality of projections extending in a circumferential direction of the glass substrate, and the plurality of projections have upper ends that are aligned at a predetermined level.

20 16. The glass substrate according to claim 15, wherein the plurality of projections have flat upper surfaces.

25 17. The glass substrate according to claim 15, wherein the plurality of projections have flush upper surfaces.